



# LAFREE TWIST Model Year 2002

## Owners Manual

June 2001.



**Lafree**  
ELECTRIC BICYCLES

**Twist** lite

## Contents:

1. Read this manual ! .....	3
1.1 Trademarks .....	3
1.2 Approval and conformity .....	3
2. What it's called .....	4
2.2 Battery and charger .....	5
2.3 Handlebar and stem .....	5
2.4 Position of the serial numbers .....	5
3. Fit and safety .....	7
3.1 Fit .....	7
3.2 Saddle position .....	8
3.3 Handlebar height and angle .....	9
3.4 Safety equipment .....	9
3.4.1 Lights .....	9
3.4.2 Reflectors .....	10
3.4.3 Helmet .....	10
3.5 Mechanical safety checks .....	10
3.5.1 Nuts & bolts .....	10
3.5.2 Tyres & wheels .....	10
3.5.3 Brakes .....	11
3.5.4 Quick-releases .....	11
3.5.5 Handlebar and saddle alignment .....	11
4. Riding safely and responsibly .....	12
4.1 The basics .....	12
4.2 Rules of the road .....	12
4.3 Wet weather riding .....	12
4.4 Night riding .....	12
5. Battery and charger operation .....	13
5.1 Battery detachment, charging & installation .....	13
5.1.1 General .....	13
5.1.2 Detachment, charging, installation .....	13
5.1.3 Refresh charging .....	15
5.1.4 Energy indicator .....	17
5.1.5 Battery capacity, range and charging time .....	18
5.1.6 Range .....	18
5.2 Storage & transportation .....	19
To store the battery .....	19
Transportation of Lafree Twist .....	19
5.3 Care & maintenance .....	19
Battery .....	19
Charger .....	20
5.4 Battery disposal: what to do with the battery when it's useless .....	20
6. How things work .....	21
6.1 General .....	21
6.2 Power control switch .....	21
6.3 Front wheel quick release .....	22
6.3.1 General .....	22
6.3.2 Adjusting the quick-release mechanism .....	22
6.3.3 Front wheel secondary retention devices .....	23
6.3.4 Removing a quick-release front wheel .....	23
6.3.5 Installing a quick-release front wheel .....	24
6.4 Brakes .....	24
How brakes work .....	24
6.5 Gear changing .....	25
6.5.1 What the gears are for .....	25
6.5.2 Shifting gears .....	25
6.6 Tyres and inner tubes .....	25
6.6.1 Tyres .....	25
6.6.2 Tyre air valves .....	25
6.7 Lighting system .....	26
6.8 Lock .....	26
6.9 Kick stand .....	26
6.10 Luggage carrier .....	27
7. Transportation of Lafree Twist .....	27
8. Service & maintenance .....	27
8.1 General .....	27
8.2 Service & maintenance schedule .....	28
8.3 Tightening torque .....	30
9. Precautions and procedures .....	31
9.1 Emergency equipment and knowledge .....	31
9.2 If you get a flat tyre .....	31
9.3 If you break a spoke .....	32
9.4 If you crash .....	32
10. Comfort & performance accessories .....	32
11. Dealer service .....	33
11.1 About your dealer .....	33
11.2 Guarantee regulations of Lafree Europe .....	33

## 1. Read this manual !

Please read all information in this manual carefully to gain maximum performance, safety and enjoyment from your Lafree Twist electric bicycle.

Congratulations! You have just pedalled into the exciting world of electric power assistance for bicycles. In addition to being a full-featured bicycle, the Lafree Twist has an integrated on-board electric power assist unit. The assisted pedal system is easy to use and understand. However, due to its sophisticated technology, it is extremely important that you follow the directions for their operation carefully and completely. Failure to do so could cause damage to the motor, energy set (battery pack/charger unit) or the entire bicycle

Even though Lafree Twist functions as a standard bicycle, you should still review the chapters on bicycle operation, especially if you haven't ridden/owned a bicycle within the last 10 years. Component performance and configuration has changed dramatically, and while they are easy to use and understand, they may not look quite the same as what you are familiar with! Taking a few moments now to understand Lafree Twist's operating procedures will help you get the most out of every ride.

Please read section [5.1: "Battery detachment, charging and installation"](#) before operating Lafree Twist's electric powered functions. Lafree Twist's battery must be charged completely before the motor (power assisted pedalling) can be operated.

### 1.1 Trademarks

The following trademarks are registered trademarks of Giant in Europe and other countries:

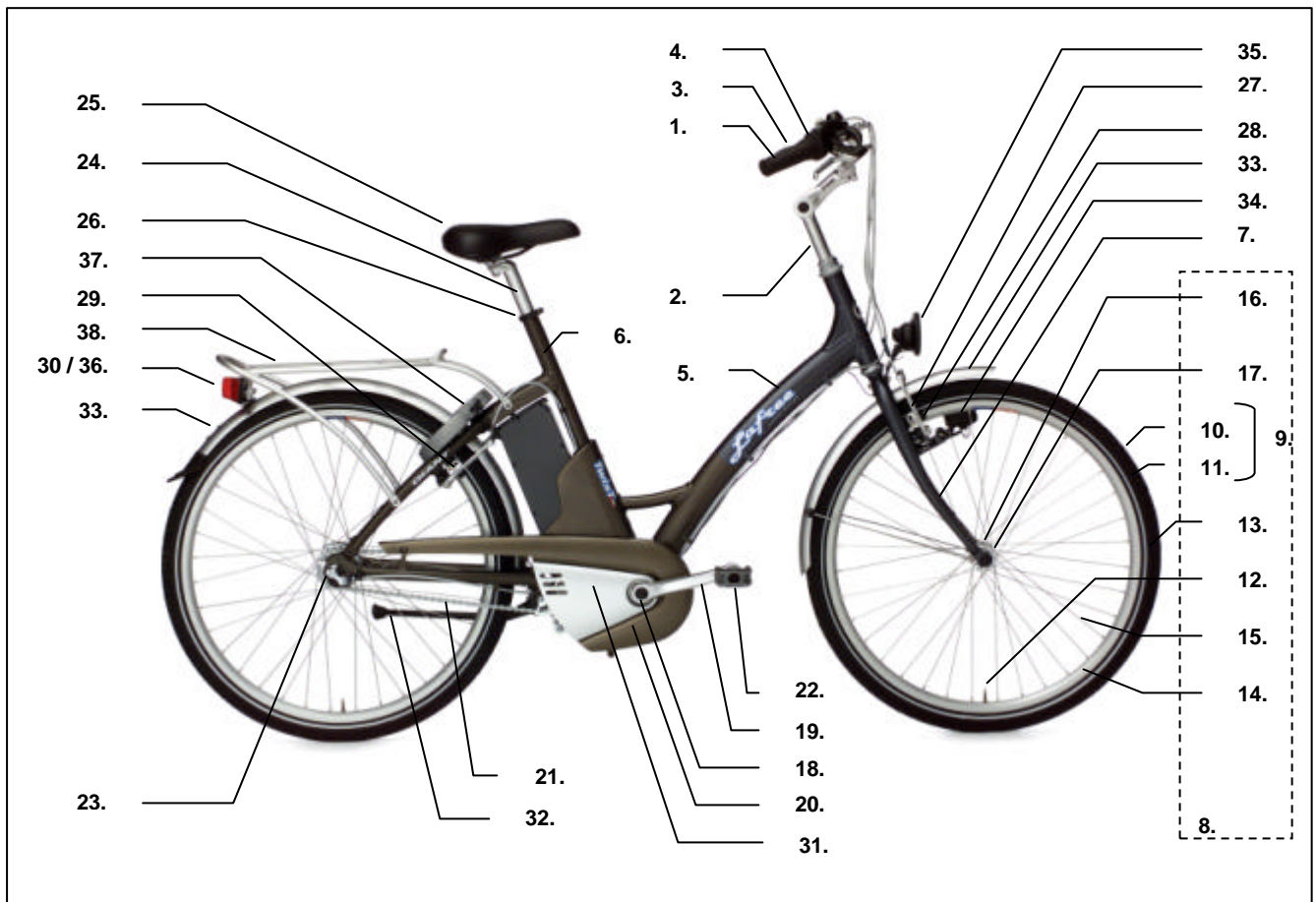
- Lafree
- Twist

### 1.2 Approval and conformity

This Lafree Twist bicycle fulfils the requirements of the following EC directive:  
Electro Magnetic Compatibility directive (89/336/EEG).



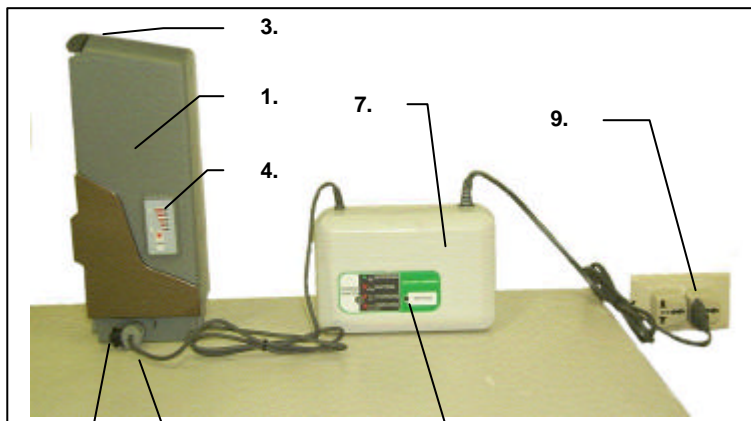
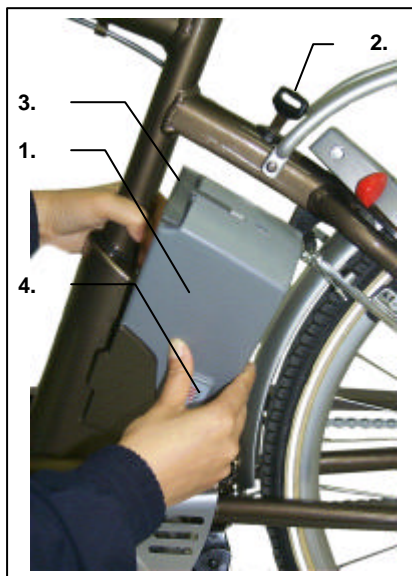
## 2. What it's called



### 2.1 General

- |  |  |
|--|--|
| 1. Handlebar                                     | 20. Chain ring (inside motor housing)        |
| 2. Handlebar stem (2 versions: gents and ladies) | 21. Chain                                    |
| 3. Power control switch - left side              | 22. Pedal                                    |
| 4. 3-speed hub gear shifter - right side         | 23. 3-speed rear hub / sprocket              |
| 5. Frame   | 24. Seat post (2 versions: gents and ladies) |
| 6. Seat tube                                     | 25. Saddle                                   |
| 7. Front fork                                    | 26. Seat post binder                         |
| 8. Wheel   | 27. Linear pull front brake                  |
| 9. Tyre  | 28. Brake shoe                               |
| 10. Tread  | 29. Linear pull rear brake                   |
| 11. Side wall                                    | 30. Reflector                                |
| 12. Valve stem (part of inner tube)              | 31. Motor housing                            |
| 13. Inner tube (inside tyre)                     | 32. Kick stand                               |
| 14. Rim  | 33. Splash guard/fender (front and rear)     |
| 15. Spoke  | 34. Dynamo                                   |
| 16. Hub  | 35. Front light                              |
| 17. Quick-release cam lever                      | 36. Rear light                               |
| 18. Bottom bracket                               | 37. Lock                                     |
| 19. Crank arm                                    | 38. Luggage carrier                          |

## 2.2 Battery and charger



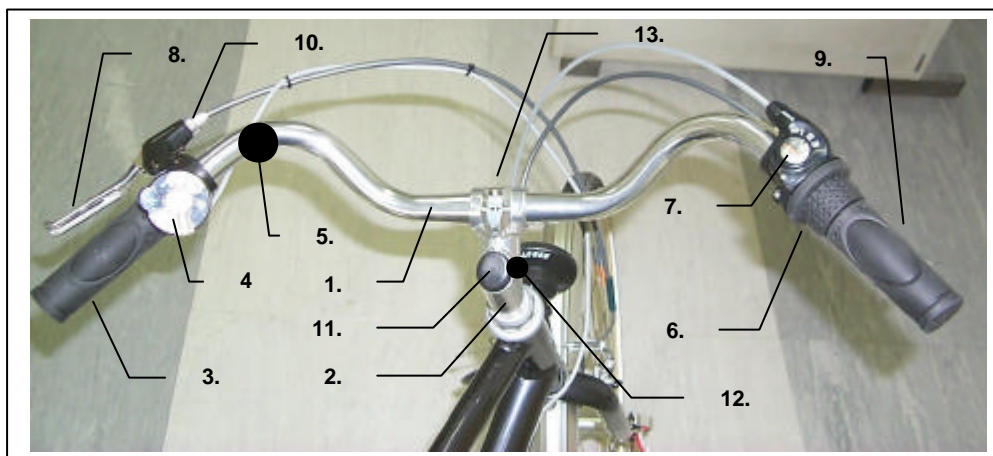
- 1. Battery
- 2. Battery lock
- 3. Grip
- 4. Energy indicator

- 5. Charging socket
- 6. Socket cap
- 7. Charger
- 8. Charger plug
- 9. Power source plug
- 10. Refresh button

## 2.3 Handlebar and stem

- 1. Handlebar
- 2. Handlebar stem (2 versions: gents and ladies)
- 3. Grip
- 4. Power control switch
- 5. Bell
- 6. Gear shifter
- 7. Gear indicator

- 8. Left hand brake lever
- 9. Right hand brake lever
- 10. Brake adjusting barrel
- 11. Stem height adjuster bolt
- 12. Handlebar stem inclination bolt
- 13. Handlebar clamp bolt



## 2.4 Position of the serial numbers

Please record Lafree's bike serial number and battery serial number for future reference. The serial number of the bike is stamped into the left rear "dropout" of the frame. The dropout is the piece of frame that holds the axle of the rear wheel (see fig. 08).



Battery's serial number: see fig. 09.



Battery's serial number

### 3. Fit and safety

#### 3.1 Fit

Make sure the bike fits. A bike that's too big or too small for the rider is harder to control and can be uncomfortable or dangerous.

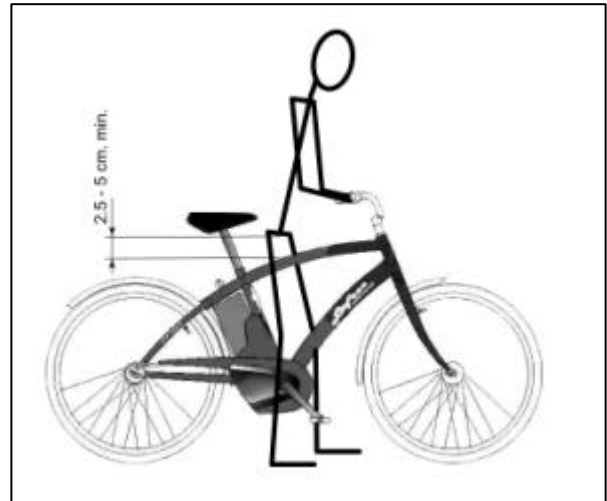
##### Frame size.

Your dealer will have recommended the best frame size for you, based on the information provided. If you picked your own bike at the dealer shop, your dealer took the time to fit you to the correct frame size at the time. If someone else selected the bike for you, as a gift, for example, it's important for you to make sure that it fits before you ride it.

##### Standover height (see fig.10).

It is the distance from the ground to the top of the top tube at the point where your crotch would be if you were straddling the bike by standing half way between the saddle and the handlebar stem. To check, straddle the bike. If your crotch touches the frame, the bike is too big for you. A bike you ride only on-road should offer a minimum clearance between top tube and your crotch of 2.5 to 5 cm. (one to two inches).

A bike that you'll ride off-road tracks should have 7.5 cm. (three inches) minimum clearance, whilst a mountain bike for use on tough terrain should offer 10 or more cm. (four or more inches) clearance.





### 3.2 Saddle position

Correct saddle adjustment is important in getting the best performance and comfort from your bicycle.

a. Up and down adjustment.

Your leg length determines the correct saddle height. To check for correct saddle height:

- sit on the saddle
- place one heel on a pedal
- rotate the crank until the pedal with your heel on it is in the lowest position and the crank is parallel to the seat tube.
- your leg should be almost straight. If not, your saddle height needs adjusting.

To adjust the saddle height, loosen the seat post fixing bolt (see fig. 11a) and move the seat post up or down as required. Then, make sure that the saddle is parallel to the top tube of the bike, and retighten the seat post fixing bolt tight enough so that you cannot twist the saddle out of alignment. Check the adjustment as described above. The seat post shall NOT project from the frame beyond its Minimum Insertion mark (see fig. 11b).

NOTE:

In order to guarantee the quality of the frame, Giant uses different types of seat posts for gents and ladies bikes Lafree Twist. The difference between the 2 types seat posts is the position of the Minimum Insertion marks.

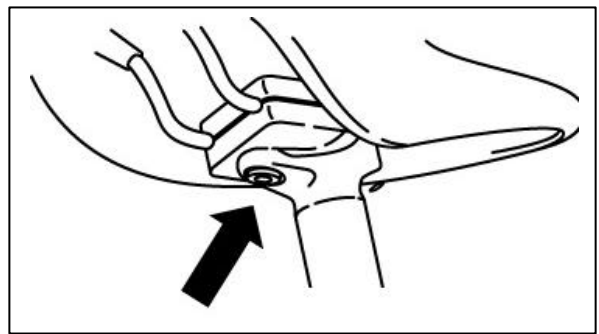
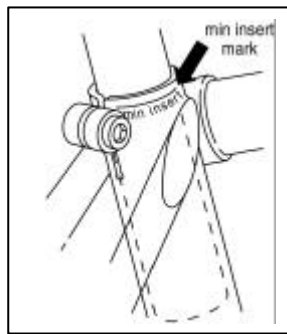
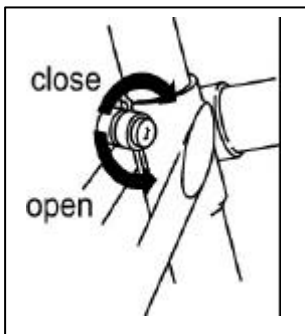
The minimum insertion length of the seat post for the ladies bike is 15 cm.

The minimum insertion length of the seat post for the gents bike is 10 cm.

Keep this in mind when you need a new seat post. Be careful when you switch seat posts of ladies and gents bikes.

b. Front and back adjustment.

To find the most comfortable position, loosen the saddle clamp and adjust the saddle forward or back to suit you. Retighten the saddle clamp. (See fig. 12).



c. Saddle tilt adjustment.

Most people prefer a horizontal saddle, but some riders prefer to have the saddle tilted up or down a little. Adjust the saddle tilt by loosening the saddle clamp, tilting the saddle to the desired position, and re-tightening the saddle clamp.

Very small changes in saddle position will make a big difference. Make only one change at a time, and only in small steps until you have found your most comfortable position.

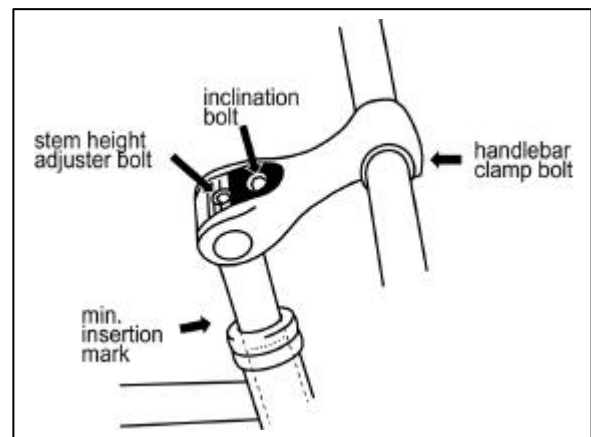
WARNING:

After any saddle adjustment, be sure to tighten the saddle adjusting mechanism properly before riding. Periodically check to make sure that the saddle adjusting mechanism is properly tightened.



### 3.3 Handlebar height and angle

- a. Handlebar stem height.  
You can raise or lower the handlebars. Loosen the stem height adjuster bolt (see fig. 13) by turning it anti-clockwise three or four turns. If the bolt rises but the stem doesn't move, tap the bolt carefully down, using a plastic or wooden hammer. Set the handlebar stem at the correct height and perpendicular to the front wheel. Fasten the bolt to the correct torque, so that you cannot twist the stem and handlebars (see section 8.3 "Tightening torque"). The Minimum Insertion mark must NOT be visible.



#### Note:

In order to guarantee the quality of frame and fork, Giant uses different types of handlebar stems for gents and ladies bikes Lafree Twist. The difference between the 2 types stems is the position of the Minimum Insertion marks.

The minimum insertion length of the stem for the ladies bike is 80 mm.

The minimum insertion length of the stem for the gents bike is 65 mm.

Keep this in mind when you need a new handlebar stem.

- b. Handlebar angle.  
By tilting the handlebar you can direct the grips more upward or downward. This is a matter of personal taste. Loosen the bolt at the front side of the handlebar stem (handlebar clamp bolt). Tilt the handlebar to the required position. Fasten the bolt to the correct torque (see section 8.3 "Tightening torque"). Check and if required adjust the position of the brake levers.
- c. Handlebar stem angle.  
The adjustable handlebar stem allows you to adjust the angle of the handlebar stem extension. Loosen the inclination bolt and set the extension to the required inclination. Fasten the bolt to the correct torque (see section 8.3 "Tightening torque"). Check and if needed adjust the angle of the handlebar and the position of the brake levers.

After changing the position of the handlebar or the stem, check to make sure that the handlebars can rotate freely in both directions without the brake cables catching or binding on anything.

It is essential to thoroughly check that your bars and stem are tight and cannot be moved after you have made any adjustments.

### 3.4 Safety equipment

#### 3.4.1 Lights

Lights are important safety devices which are designed as an integral part of Lafree Twist. If you ride your bike after dusk, you must turn on the lights so that you can see the road and avoid road hazards; and so that others can see you.

### 3.4.2 Reflectors

Reflectors are important safety devices which are designed as an integral part of Lafree. The reflectors are designed to pick up and reflect street lights and car lights in a way that helps you to be seen and recognised as a moving bicyclist.

Caution: Check reflectors regularly to make sure that they are clean, straight, unbroken and securely mounted. Have your dealer replace damaged reflectors and straighten or tighten any that are bent or loose.

### 3.4.3 Helmet

Our advice is to wear a good quality helmet at all times whilst riding your bike.

## 3.5 Mechanical safety checks

### 3.5.1 Nuts & bolts

Inspect the bike closely from front to rear for any obvious signs of worn or broken components. Grasp the handlebar with both hands and lift the front wheel off the ground 5-10 cm. (two or three inches), then let it drop firmly on the ground while still holding the handlebar. If anything sounds, feels or looks loose, do a quick visual and tactile inspection of the whole bike. Try to find the source of noise or any obvious loose components, and secure them. If you're not sure, ask someone with experience to check, or take your Lafree Twist to your authorised Lafree dealer.

### 3.5.2 Tyres & wheels

Check proper tyre inflation by placing your hand directly on top of each tyre individually. With a straight arm and direct downward pressure, push on the tyre with downward body weight and watch the spot where the tyre is contacting the ground. There should be very little tyre compression. If your tyres need inflating, use a standard bicycle floor pump ([see section 6.6.1: "Tyres"](#)). If you must use a high-volume compressor like those found at automotive service stations, add air in small amounts as these compressors are designed to fill auto tyres which have much larger volumes than bicycle tyres. Adding too much pressure all at once could cause the inner tube to explode, which can cause severe damage to the tyre and serious injury.

Spin each wheel slowly and look for cuts in the tyre's tread and side wall. Replace damaged tyres before riding the bike.

Spin each wheel and check for brake clearance and side-to-side wobble of the rim. If a wheel wobbles side to side or contacts the brake shoes, take the bike to a qualified bike shop to have the wheel aligned.

#### CAUTION:

Wheels must be "true" (aligned) for the brakes to work effectively. Wheel truing is a skill which requires special tools and experience. Do not attempt to true a wheel unless you have the knowledge and tools needed to do the job correctly.

### 3.5.3 Brakes

Visually inspect the brakes for proper cable routing (see fig. 14a).

Squeeze the brake levers. Brake levers should engage brake shoes at approximately half way through their arc, or within about 2.5 cm. (an inch) of handlebar grip. To check proper brake lever travel, encircle the hand grip with your thumb and forefinger, then squeeze the brake lever with the remaining three fingers of each hand. If you can squeeze the levers so that they touch your forefinger, you should have a qualified service centre adjust your brakes.

Make sure that the brake's brake shoes are contacting the rim's braking surface fully (see fig. 14b). Also check that the shoes are not coming into contact with the tyre's side wall whilst applying the brake. Riding the bike with brake shoes contacting the side wall can cause the tyre to be damaged and the inner tube to puncture, which may cause you to lose control and fall. Do not ride the bike until the brakes are properly adjusted. See section 6.4: "Brakes" for details.

#### WARNING:

Riding with improperly adjusted brakes or worn brake shoes is dangerous and can result in serious injury.



### 3.5.4 Quick-releases

Check to see that the front wheel quick-release lever is properly adjusted and in the locked position. See section 6.3: "Front wheel quick release" for details.

#### WARNING:

Riding with an improperly adjusted wheel quick-release can cause the wheel to wobble or disengage from the bicycle, which can cause damage to the bicycle and serious injury.

### 3.5.5 Handlebar and saddle alignment

Are the saddle and handlebar stem correctly in line with the bike's top tube and tight enough so that you can't twist them out of alignment?

## 4. Riding safely and responsibly

### NOTE:

Riding a bicycle involves certain risks, including damage and injury. By choosing to ride a bicycle, you assume personal responsibility for those risks. The people who sold you the bike, the manufacturer, the distributor, and people who manage or maintain the roads and trails you ride on are not responsible for your actions. Therefore, it is extremely important that you understand - and practice - the rules of safe and responsible riding, and to use common sense whenever possible and applicable.

### 4.1 The basics

Carry out the mechanical safety checks ([see section 3.5](#)) before you attempt to ride Lafree Twist.

### 4.2 Rules of the road

Learn the local bicycle laws and regulations. Many countries have special regulations about licensing of bicycles, riding on sidewalks, laws regulating bike path and trail use, and so on. Many countries have helmet laws, child carrier laws and special bicycle traffic laws. In most countries, a bicyclist is required to obey the same traffic laws as the driver of a car or motorcycle. It is your responsibility to know and obey the laws.

### 4.3 Wet weather riding

Under wet conditions, the stopping power of your brakes (as well as the brakes of other vehicles sharing the road) is reduced, and tyre-to-surface adhesion (“traction”) is also compromised. This makes it harder to control speed and easier to lose control. Whenever wet conditions are present, reduce speed and apply your brakes earlier and more gradually than you would under normal, dry conditions.

### 4.4 Night riding

Riding a bicycle at night is much more dangerous than riding during the day.

### WARNING:

Riding at dusk, after dark or at times of poor visibility without a bicycle lighting system which meets national laws and without reflectors is dangerous and can result in accidents.

Before riding at dusk or at night, take the following steps to make yourself more visible:

- Make sure that your bicycle is equipped with correctly positioned and securely mounted lighting system and reflectors ([see sections 3.4.1, 3.4.2 and 6.7](#)).
- Make sure that lights and reflectors are not obstructed by your clothing, accessories, or anything you may be carrying on the bicycle.

## 5. Battery and charger operation

### 5.1 Battery detachment, charging & installation

#### 5.1.1 General

##### CAUTION:




Please read the following general safety tips for charging or refresh charging Lafree Twist's battery.



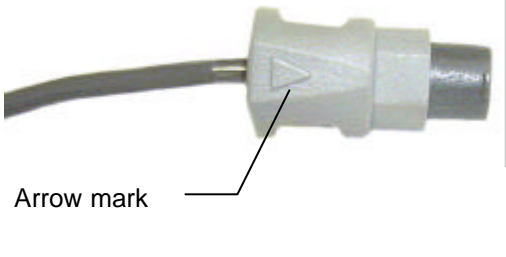




- The charging area must be level, well ventilated, free from moisture and protected against direct sunlight.
- Charge the battery at an ambient temperature of 0°C - 40°C (when the inside temperature of the battery is below 0°C or over 40°C, the charger remains in stand-by mode and the battery cannot be charged).
- Do not attempt to charge a Twist battery with a broken or bent charging plug.
- Do not use any power source other than AC 220~230 volts.
- Do not cover the battery during charging or refresh charging.
- If you notice a strange smell, vapour or smoke, stop the charging procedure immediately!  
Take your Lafree Twist bicycle to your authorised Lafree dealer for service or replacement.
- If the range per charge becomes too short, even after refreshing the battery (see section 5.1.3: "Refresh charging"), the battery's life may have come to an end. Replace the battery with a new one.  
The NiMH battery has, if used in accordance with the guidelines in this manual, a life span of more than 500 charging cycles.
- Do not charge or refresh charge the battery for over 24 hours. This would seriously reduce the life of the battery.

#### 5.1.2 Detachment, charging, installation

The battery of the Twist is very simple to remove and store. For charging, the battery has to be detached from the bicycle. If this is not done in the proper way there is a possibility of damaging the battery.





How to detach the battery from, install it on the bicycle and how to charge.

Step 1.	Hold the battery and turn the key of the battery lock anti-clockwise to open.		
Step 2.	Move the battery 45° sideways. Eject the grip and lift the battery out of the holder.		

Step 3.	Place the battery in a stable position, in such a way that the energy indicator is visible.		
Step 4.	Remove the cap from the battery's charging socket, which is located at the bottom of the battery.		
Step 5.	Put the charger plug into the battery's charging socket with the arrow mark UP.	 Arrow mark	
Step 6.	Connect the power source plug into an electric point (AC 220~230 volts) and make sure that all poles are fully inserted into the socket. Keep the area where the battery is charged well ventilated and free from litter or anything else combustibile to avoid fire from sparks or overheating.		
Step 7.	<p><b>DO NOT PUSH THE “REFRESH” BUTTON ON THE CHARGER.]</b></p> <p>For “REFRESH-charging” <a href="#">see section 5.1.3</a> (below).</p> <p>The lamp located on the charger will illuminate RED, indicating that electricity is flowing into the battery.</p> <ul style="list-style-type: none"> <li>• First, the lamp blinks RED for a few seconds, then it gives steady RED light when charging and</li> <li>• blinks slowly after <b>approx. 4~5 hours</b> (in case of full charge), indicating that the battery has reached full capacity and charging has completed.</li> </ul>	 	

Normal charging:

	LIGHT ON CHARGER	HOW LONG DOES IT TAKE ?	WHAT'S HAPPENING ?
1.	RED light blinks 0.9 sec “on” / 0.1 sec “off”	Just a few moments	Charging will start soon (“waiting”)
2.	RED light burns	4~5 hours max.	Charging
3.	RED light blinks slowly 2 sec “on” / 2 sec “off”	Until the power source plug is disconnected	Charging completed ! (“completion”)

Step 8.	Disconnect the power source plug from the electric point.		
Step 9.	Disconnect the charger plug from the battery.		
Step 10.	Mount the battery onto the bicycle (step 2 and 1 in reversed order). Make sure that the battery is secured in "LOCK" position, so that it cannot move sideways.		

### 5.1.3 Refresh charging




Lafree Twist's charger has the capability to do a battery refresh. Refreshing simply involves the process of fully discharging the battery before it is fully recharged. This process is an essential step to extend the life of Twist's batteries.

Refresh charging takes more time than normal charging. Depending on the amount of energy that is still in the battery, the process may take approx. **15 hours**



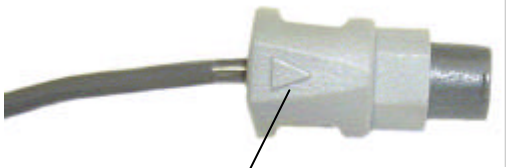





Refresh charging has to be done frequently.

This process has to be executed after every **15 times normal charging**, but at least once **every 3 months**

This is how to do it:





Step 1.	Hold the battery and turn the key of the battery lock anti-clockwise to open.		
Step 2.	Move the battery 45° sideways. Eject the grip and lift the battery out of the holder.		



Step 3.	Place the battery in a stable position, in such a way that the energy indicator is visible.	
Step 4.	Remove the cap from the battery's charging socket, which is located at the bottom of the battery.	
Step 5.	Put the charger plug into the battery's charging socket with the arrow mark UP.	 <p>Arrow mark</p> 
Step 6.	Connect the power source plug into an electric point (AC 220~230 volts) and make sure that all poles are fully inserted into the socket. Keep the area where the battery is charged well ventilated and free from litter or anything else combustibile to avoid fire from sparks or overheating.	
Step 7.	<p>The lamp located on the charger will illuminate RED, indicating that electricity is flowing into the battery. First, the lamp blinks RED for a few seconds.</p> <p><b>PUSH THE "REFRESH" BUTTON ON THE CHARGER.</b></p> <p>The LED of the charger will start illuminating steady GREEN light, indicating that the batteries are being discharged / refreshed.</p>	  
Step 8.	The light turns from GREEN into RED, indicating that refreshing has completed and the battery will be recharged.	
Step 9.	When the RED light turns from steady burning into blinking slowly, the battery has reached its full capacity.	

Refresh-charging:

	LIGHT ON CHARGER	HOW LONG DOES IT TAKE ?	WHAT'S HAPPENING ?
1.	RED light blinks 0.9 sec "on" / 0.1 sec "off"	Just a few moments	Charging will start soon ("waiting")
2.	Push "REFRESH" button on the charger		
3.	GREEN light burns	10 hours max.	Discharging / refreshing
4.	RED light burns	4~5 hours max.	Charging
5.	RED light blinks slowly 2 sec "on" / 2 sec "off"	Until the power source plug is disconnected	Charging completed ! ("completion")

Step 10.	Disconnect the power source plug from the electric point.	
Step 11.	Disconnect the charger plug from the battery.	
Step 12.	Mount the battery onto the bicycle (step 2 and 1 in reversed order). Make sure that the battery is secured in "LOCK" position, so that it cannot move sideways.	 

#### 5.1.4 Energy indicator

The amount of energy available is indicated via a Light Emitting Diode (LED) string, located on the battery. (see fig. 18 and 29). The indicator will illuminate when you push the "PUSH" button. When fully charged, all five LEDs will be illuminated. As energy is used, less LEDs are illuminated. The light of the LEDs will go out after a few seconds.



### 5.1.5 Battery capacity, range and charging time

LEDs illuminated	Energy available	Remaining range* [km.]	Charging time**
1 (blinking)	Less than 1 %	< 1 km.	4 ~ 5 hours
1	1 ~ 20 %	< 5 km.	3 ~ 4 hours
2	21 ~ 40 %	5 ~ 15 km.	2 ~ 3 hours
3	41 ~ 60 %	10 ~ 20 km.	1.5 ~ 2 hours
4	61 ~ 80 %	15 ~ 25 km.	1 ~ 1.5 hours
5	81 ~ 100 %	20 ~ 35 km.	0.5 ~ 1 hours

\* Note 1: remaining range is just a reference. Figures shown are based on riding in “normal” mode. Actual remaining range depends on selected mode (“ECO” or “normal”), weather conditions, riding style, selected gears, etc. [See section 5.1.6: “Range”](#).

\*\* Note 2: also charging time is just a reference. Actual charging time depends on the age of the battery and the number of times it has been charged / discharged. Longer charging time may be necessary for older batteries.

### 5.1.6 Range

The range is the distance you can cycle using power assistance on one charge. This depends on many different factors that can be divided into 2 groups:

- Capacity and condition of the battery
- The cycling circumstances and the state of the bicycle.

A summary of matters that have direct influence on the distance that you can ride:

1. Age of the battery: when the battery gets older, its capacity becomes less. So, with a brand new, well charged battery you can ride a larger distance than with a battery that is 1 year old.
2. Number of battery charges: the riding range decreases after a number of battery recharges. Partly this can be compensated by “refresh charging” ([see section 5.1.3](#)).
3. The temperature: the performance of the battery depends on the temperature. When it’s colder, the battery’s capacity is reduced, so you cannot reach the maximum distance with your Lafree.
4. The wind: easy to understand that, when you ride with strong head wind, the Lafree uses more energy than without wind, so the reach becomes shorter.
5. The terrain (flat, steep hills, slopes, pavement): [same as previous point \(4\)](#), if you ride uphill or on rough pavement, the engine uses more energy than on flat or smooth roads.
6. Rider’s weight and luggage: for a light rider without additional luggage is less energy required than for a heavy rider or a rider that carries luggage.
7. The number of stops and starts: riding in heavy traffic or in the city with lots of traffic lights means that you have to make much more stops and starts compared with riding in the countryside. Because of the energy consumed during acceleration, the riding range becomes shorter when the number of stops and starts increases.
8. Clever use of gears: energy (from the rider, but also from the battery) will be saved if the gears on the bike are used in the correct way. Especially accelerating and riding uphill should be done in low gears, in the same way as driving a car. Start riding in 1st gear and, when speed increases, shift to 2nd and 3rd gear. This helps you to save energy and to increase the range.
9. Quality and state of bicycle components, such as
  - tyres with too low pressure or well inflated tyres.
  - a dirty, corroded, dry chain or a clean and well lubricated chain.Poor maintenance increases the resistance and the extra energy required empties your battery quicker.

It may be clear that it's very difficult to say how far you can ride with your power assisted Twist with a full battery, simply because there are too many factors that have influence.

Under the best possible circumstances, you can cycle

- max. 25 ~ 35 km. in "normal" mode
- max. 30 ~ 40 km. in "ECO" mode.

In "Eco" mode, the assistance power is about half of the normal mode. It could save the energy consumption and extend the range. The "ECO" mode saves energy consumption and extends the range with approx. 50%.

Trip distances mentioned here are just a very rough indication. In some cases the power assistance stops already before the 20 km. mark is reached, while someone else under other conditions may be able to ride more than 40 km.

#### **Short summary of recommendations for a high range:**

- ☺ Charge the battery under room temperature (15 ~ 25 degrees C.)
- ☺ Try to ride the battery as empty as possible before re-charging
- ☺ Refresh-charge after every 15 times normal charging, but at least once every 3 months
- ☺ Use the gears while accelerating or riding uphill
- ☺ Don't ride with too low tyre pressure and keep the chain clean and well lubricated.

## **5.2 Storage & transportation**

To store the battery

If the battery is going to be stored for an extended period of time, it is recommended to charge the battery once for every 3 months of storage. If the battery remains in storage without being charged every 3 months, it's possible that the battery's capability to retain energy is affected.

#### **CAUTION:**

Store the battery in a cool, dry, level and safe area with good ventilation and away from any heat source. If the Lafree Twist bike is stored with the battery in place, turn the power control switch on the handlebar to the "OFF" position. Leaving the switch in the "ON" position while stored or parked will result in faster energy loss.

Transportation of Lafree Twist

When transporting your Twist, it is best to remove the battery. The bike becomes lighter, so it is easier to lift and manoeuvre.

## **5.3 Care & maintenance**

Battery

There are no parts inside the battery that you can service. If you suspect a problem, take your Twist and the battery to your authorised Lafree dealer.

#### **CAUTION:**

Please read the following general safety tips for care and maintenance of Lafree Twist's battery.

- Do not place the battery into a fire or near any heat source, as it can explode and cause serious injury.
- For cleaning the battery casing, use a cloth moistened with water only. Do not use solvents or cleaning solutions of any kind.
- Do not attempt to open the casing of the battery. There are no parts inside the battery that you can service. If you suspect a problem, take your Twist with the battery to your authorised Lafree dealer.

- Inspect the battery periodically for cracks, unusual residue, or other abnormal appearance. Do not use a battery with cracks or breaks in the casing.
- Do not attempt to use the Twist's battery as a power supply for anything other than a Lafree Twist.
- Always pull the charging cable gently. To remove a cable from a socket, pull the plug, don't pull the cable.
- Use the genuine Lafree Twist charger to charge the battery.

## Charger

### DANGER:

Please note that improper handling poses a high risk of fatal accidents, serious injury or damage to the product and property.

- Do not short-circuit the charger's plugs and sockets by using metallic objects.
- Do not attempt to disassemble or modify the charger. There are no parts inside the charger that you can service. If you suspect a problem, take the charger to your authorised Lafree dealer.
- Do not use the charger to charge batteries other than genuine Lafree Twist batteries (Ni-MH 24V/130Ah). Overheating, fire or electric shock may be the result.
- Do not subject the charger to shocks, e.g. by dropping. Do not expose the charger to liquids.
- Do not use a damaged charger or components (e.g. charger casing, cable, plug). (Electric shock, short-circuit or fire may be the result).
- Do not touch a plug with wet hands (electric shock may be the result).
- Do not apply too much pressure to the cables or the plugs. (e.g. squeezing the cable between a wall and a window frame, or placing heavy objects on the cable or the plug: that may result in an electric shock or fire).
- Keep the charger out of reach of children or pets (electric shock or injury may be the result).
- Be sure that the plug is completely inserted into an electric point (if not, an electric shock and overheating may be the result, possibly causing fire).
- Do not use the charging plug and/or the plug for a power source when they are dusty. Moisture absorbed by the dust may conduct electricity, causing fire. Pull out the power source plug and clean it with a dry cloth.
- Do not apply voltage other than the rated value to the charger. Do not use sockets, connectors and other wiring devices with a power source other than standard AC 220~230 volts. Overheating, fire or electric shock may be the result.
- Do not touch the charger with the same part of your skin for a long time during charging. Skin may burn, as the external temperature of the charger during charging may become 40°C - 60°C.
- Do not place the charger in an unstable position. Using the charger upside-down or stretching the cable tight may result in malfunction, fire or electric shock. Place the charger firmly on a flat surface.
- Do not cover the charger or put things on it. Overheating or fire may be the result.

## 5.4 Battery disposal: what to do with the battery when it's useless

After some time, depending on the number the battery is charged and the way it is treated, your battery reaches its end of life. At that moment, the battery loses its capacity very fast and cannot be recovered by refresh-charging.

Regulations for battery disposal may differ from country to country.

The battery shall be disposed in a way friendly to our environment. So, don't simply put it down the garbage, but return it to your authorised Lafree dealer. He will take care of the disposal and can directly order a new battery for you.

## 6. How things work

### 6.1 General

It is extremely important to the performance, enjoyment and safety of your Lafree Twist and yourself to understand how many of the features of Lafree Twist operate. You should not assume that the way things have worked on previously owned bicycles operate similarly on Lafree Twist, even if you're an experienced cyclist. Be sure to read – and to understand – this section of the owner's manual. If you have even the slightest doubt about how any of the mechanical features of Lafree Twist operate, talk to your authorised Lafree dealer.

### 6.2 Power control switch

The power control switch is located on the left-hand side of handlebar (see fig. 30 and 06).

Turn the switch to "ON" or "ECO" position and the motor will provide you assist power when you pedal the bicycle.

"ON" indicates the assistance power in normal mode and "ECO" indicates economic mode. In "ECO" mode, the assistance power is about half of the normal mode. It could save the energy consumption and extend the range. The "ECO" mode saves energy consumption and extends the range with approx. 50%.



The power control switch has a LED that emits RED light in the following cases:

- When you switch from "OFF" to "ON" or "ECO", the LED will light up for approx. 2 seconds, indicating that the system is okay.
- When the LED lights up when riding, it means that something is wrong !  
The light will keep burning (steady, not blinking) for approx. 3 minutes, then it will shut off.  
Turn the switch to "OFF" and back to "ON" or "ECO" again.
  - When the LED lights up for approx. 2 seconds, the system is okay and you can continue your ride.
  - When the LED lights up but it doesn't shut off after approx. 2 seconds, there's still a problem with the electrical system.  
Finish your ride without power assistance (switch to "OFF") and bring your bike to your Lafree dealer to have it checked as soon as possible.
- Same as previous point.  
The motor and the battery are protected against very high power output (more than 15A for 4 sec.), to ensure long life.  
The motor shuts off and the LED will light up. It keeps burning (steady, not blinking) for approx. 3 minutes.  
What to do:  
Turn the switch to "OFF" and back to "ON" or "ECO" again.  
When the LED lights up for approx. 2 seconds, the system is okay and you can continue your ride.  
Examples when or how this will appear:
  - Riding uphill with high power
  - Riding with headwind with high power
  - Standing still (e.g. at traffic lights), pushing on the pedals while pulling the brakes. The motor supplies power, but the bike cannot move.
- When the battery becomes empty, the LED will start blinking:
  - when the LED blinks with 1 Hz (= 1x on/off per second), there's just 10--20% energy left
  - when the LED blinks with 4 Hz (= 4x on/off per second), there's less than 10% energy left.After approx. 4 minutes, the LED will stop blinking.

LIGHT ON POWER CONTROL SWITCH: STEADY OR BLINKING	HOW LONG DOES IT TAKE ?	WHAT'S HAPPENING ?
Steady light	2 seconds	After switching from "OFF" to "ON" or "ECO". System is okay.
Steady light	Max. 3 minutes, until you switch off.	There's a problem. Switch "OFF" and back "ON" again.
		Motor has to supply too much power and shuts off.
Blinking (slow, 1x per sec.)		Just 10~20% energy left
Blinking (fast, 4x per sec.)	4 minutes.	Less than 10% energy left

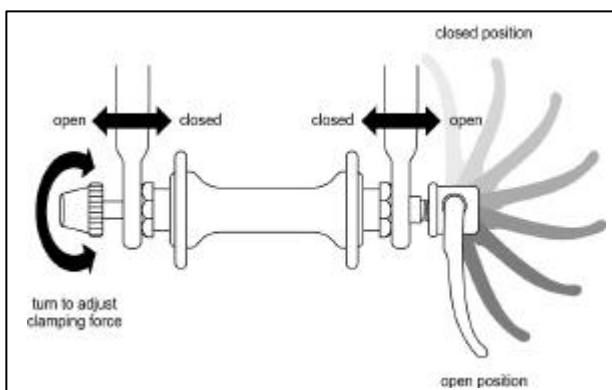
## 6.3 Front wheel quick release

### 6.3.1 General

#### WARNING:

Riding with an improperly adjusted wheel quick-release can allow the wheel to wobble or disengage from the bicycle, which may cause damage to the bicycle and serious injury to the rider. Therefore, it is essential that you:

- ask your dealer for assistance in installing and removing your wheels safely
- understand and apply the correct technique for clamping your wheel in place with a quick-release
- check that the wheel is securely clamped in the fork before each and every ride.



Because of its adjustable nature, it is critical that you understand how a quick-release lever cam works and how to use it properly.

While it may appear at first glance to be a nut and bolt configuration (a long bolt with a lever on one end and a nut on the other), in fact the wheel quick-release uses a cam action to clamp the bike's wheel in place (see fig. 31).

#### CAUTION:

Holding the nut with one hand and turning the lever like a wing nut with the other hand until tight will not clamp the wheel safely in the dropouts. The full force of the cam action is needed to clamp the wheel securely.

### 6.3.2 Adjusting the quick-release mechanism

The wheel's hub is clamped in place by the force of the quick-release cam pushing against one dropout and pulling the tension adjusting nut, by way of the skewer, against the other dropout. The amount of clamping force is controlled by the tension adjusting nut. Turning the tension adjusting nut clockwise while keeping the cam lever from rotating increases clamping force; turning it anti-clockwise while keeping the cam lever from



rotating reduces clamping force. Less than half a turn of the tension adjusting nut can make the difference between safe clamping force and unsafe clamping force.

**NOTE:**

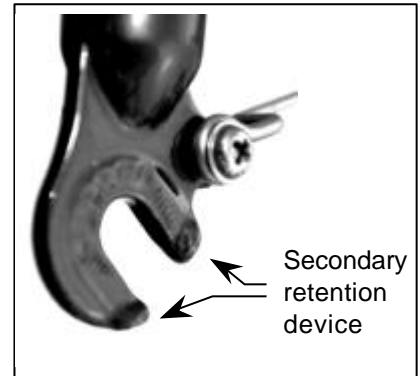
Once the quick-release is installed in the hub axle by the manufacturer or the dealer, it never needs to be removed unless the hub itself requires servicing. If the hub requires servicing, consult your dealer.

### 6.3.3 Front wheel secondary retention devices

Lafree Twist is equipped with a secondary wheel retention device (see fig. 32) to keep the wheel from disengaging if the quick-release is incorrectly adjusted or the cam opens accidentally. Secondary retention devices are not a substitute for correct quick-release adjustment.

The secondary retention device is integral with the fork dropouts and is recessed for the quick-release lever that keeps the wheel from dropping out of the fork's dropouts should the quick-release lever open accidentally.

However, these tabs are not designed to keep the wheel in place should the quick-release lever open accidentally. If you hear or feel looseness coming from the front wheel, stop riding immediately and check the quick-release tension. Ask your dealer to explain Lafree's secondary retention device in more detail.

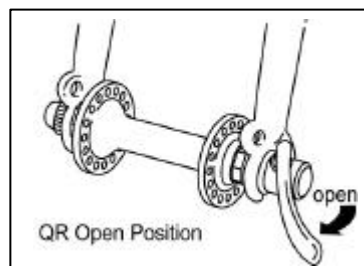
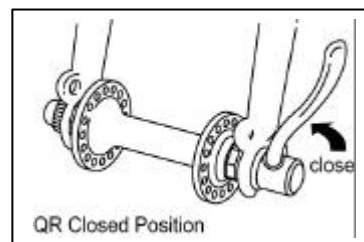


**WARNING:**

Removing or disabling the secondary retention device is extremely dangerous and may lead to serious injury or death. It also may void the warranty.

### 6.3.4 Removing a quick-release front wheel

- (a) Release the front brake's elbow cable guide and spread the brake shoes to allow the front tyre to move in between them (see fig. 33).
- (b) Rotate the wheel's quick-release lever from the locked or "CLOSE" position (you can read "CLOSE" on the lever) to the "OPEN" position (you can read "OPEN" on the lever) (see figs. 34 and 35).
- (c) Loosen the tension adjusting nut about six full turns.
- (d) Raise the front wheel a few centimetres / inches off the ground and tap the top of the wheel with the palm of your hand to knock the wheel out of the front fork.



### 6.3.5 Installing a quick-release front wheel

- (a) Rotate the quick-release lever so that it curves away from the wheel (see fig. 31 and 35). This is the "OPEN" position (you can read "OPEN" on the lever).
- (b) With the fork facing forward, insert the wheel between the fork blades so that the axle seats firmly to the top of the slots which are at the tips of the fork blades - the fork dropouts. The quick-release lever should be on the left side of the bicycle (see fig. 31 and 35).
- (c) Holding the quick-release lever in the "OPEN" position with your right hand, tighten the tension adjusting nut with your left hand in a clockwise direction until it is finger tight against the fork dropout (see fig. 31).
- (d) While pushing the wheel firmly to the top of the slots in the fork dropouts, and at the same time centring the wheel rim in the fork, rotate the quick-release lever upwards and push it into the "CLOSE" position (see fig. 31 and 34). To do this use the palm of your hand while wrapping your fingers around the right fork blade and squeezing the lever closed using your fingers and hand together. You have the proper tension if the lever leaves an impression in the palm of your hand. The lever should be parallel to the fork blade/pointing upward and curved toward the wheel.

#### CAUTION:

If you can fully close the quick-release without wrapping your fingers around the fork blade for leverage, and the lever does not leave a clear imprint in the palm of your hand, the tension is insufficient. Open the lever; turn the tension adjusting nut clockwise a quarter turn; then try again.

- (e) If the lever cannot be pushed all the way to a position parallel to the fork blade, return the lever to the OPEN position. Then turn the tension adjusting nut anti-clockwise one-quarter turn and close the lever again.
- (f) Reattach the elbow cable guide to close the brake shoes; then spin the wheel to make sure that it is centred in the fork and clears the brake shoes.

#### WARNING:

Secondary retention devices are not a substitute for correct quick-release adjustment. Failure to properly adjust the quick-release mechanism can cause the wheel to wobble or disengage, which could cause you to lose control and fall, which may result in serious injury.

## 6.4 Brakes

#### NOTE:

For most effective braking, always apply both brakes simultaneously.

#### WARNING:

Sudden or excessive application of the front brake may pitch the rider over the handlebar, which may cause serious injury.

#### How brakes work

It's important to your safety that you instinctively know which brake lever controls which brake on your bike.

The braking action of a bicycle is a function of the friction between the brake surfaces - the brake shoes and the wheel rim. To make sure that you have maximum friction available, keep your wheel rims and brake shoes clean and free of lubricants, waxes or polishes.

Brakes are designed to control your speed, not just to stop the bike. Try, as much as possible, to get used to the (strong) braking performance during your first ride.

Braking and traction forces change dramatically when riding on loose surfaces or in wet weather. Tyre adhesion is reduced, so the wheels have less cornering and braking traction and can lock up with less brake force. Moisture or dirt on the brake shoes can reduce their ability to slow and stop the wheel effectively. Riding more slowly will help you control the bicycle in wet or rough conditions.

## 6.5 Gear changing

Lafree Twist is equipped with internal rear gear hub. The gear changing mechanism on your bicycle consists of a grip shifter on the handle bar and an internal gear hub.

### 6.5.1 What the gears are for

Lafree Twist's gearing is a simple yet effective way to help you fine tune your pedal revolutions, also known as cadence. Twist's gearing is designed for rolling, moderately steep terrain.

Select a gear that is easy to pedal; never push hard on the pedals if there is an easier gear available.

You will find that pedalling with a faster action is more comfortable though most riders will need to practise this. Pushing hard will not make you fitter. The optimum pedalling speed is between 60 and 90 pedal revolutions per minute.

Lafree Twist's electric power assists your cadence by giving you a boost when you are pedalling. However, you should still use the gears to get the most performance from your legs and motor assist. Pedalling in a harder gear will cause the torque sensor to use more energy which can drain the available energy stores more quickly.

### 6.5.2 Shifting gears

Pedal along easily without putting pressure on the pedals. However, with gear hubs it is possible to shift while freewheeling or standing still.

The numbers on the shifter indicate the degree of pedal resistance: lower numbers mean less resistance at higher pedalling rate (easier pedalling); higher numbers mean more resistance at lower pedalling rate (harder pedalling).

To facilitate smooth gear shifts, always shift gears before you are on a hill. Whenever shifting gears, shift early, before pedal pressure becomes harder. Failure to utilise this technique could cause damage to the drive chain and gear mechanism.

## 6.6 Tyres and inner tubes

### 6.6.1 Tyres

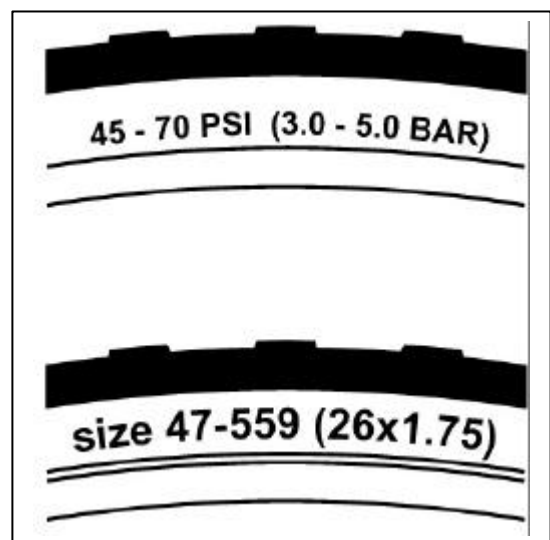
Lafree Twist's tyres are general-purpose in design, made for improved (paved) road surfaces. They are not designed for unimproved roads or trails where dirt, loose rocks, or other loose debris is present. Your dealer can help you select new tyres once they warrant replacement.

The size and pressure rating are marked on the side wall of the tyre (see fig. 36). The part of this information which is most important to you is tyre pressure.

The best way to inflate a bicycle tyre to the correct pressure is with a bicycle pump. Your dealer can help you select an appropriate pump.

### 6.6.2 Tyre air valves

Lafree Twist tyres are equipped with "French valves". To inflate a French valve tube, remove the valve cap, loosen the little centre nut a few turns. By pushing the centre nut downwards you can remove air from the tube. Make sure the pump matches the valve type. Contact your dealer if necessary.



## 6.7 Lighting system

The electricity for the lighting equipment (front and rear light) is provided by the dynamo, attached to the left side of the front fork.

If there is no need for the lighting to work, the dynamo can be in the “OFF” position, which means that the pulley on the top of the dynamo doesn’t contact the tyre of the front wheel.

If the lights have to work, the pulley of the dynamo has to be driven by the tyre of the front wheel.

To switch the dynamo (and the lights) “ON”, push the dynamo downward. A spring will push the pulley of the dynamo against the side wall of the tyre. When the front wheel rotates, the dynamo will generate electricity and the lights will burn.

If the dynamo is pulled sideways (away from the tyre), it will be pushed upward by a spring and remain in the “OFF” position.

## 6.8 Lock

Lafree Twist is equipped with a bicycle lock.

How to lock the bike.

First, turn the key clockwise as far as possible (just a little bit).

Then, while keeping the key in this position, push the big knob on the opposite side all the way downward. If the knob is not pushed far enough, it will come back into its starting position automatically. Now, the bike is locked and the key can be pulled out of the lock.

Note: make sure that the shackle of the lock can pass between 2 spokes. If a spoke is in the way, just rotate the rear wheel a bit.

How to unlock the bike.

Hold the knob of the lock with one hand and with your other hand insert the key into the keyhole of the lock. Now, turn the key a little bit clockwise. A strong spring will release the lock and the knob wants to jump back upward. Guide the knob back into the upper position carefully.

Note that the bicycle lock prevents the rear wheel from turning, making it less interesting for thieves to steal the Lafree Twist. However, the bike can still be carried away. It is recommended to combine the bicycle lock with a special cable or chain that fixes the bike to a tree, lamppost or bicycle rack.

Don't forget to turn the key of the battery lock anti-clockwise to the “LOCK” position and to pull out the key.

## 6.9 Kick stand

Lafree Twist is equipped with a retractable (spring loaded) kick stand for parking and storage while not in use. Always use the kick stand when parking or storing your Lafree Twist, so it's not necessary to lean it against something (wall, post, fence, etc.) or lay it on its side.

To park Lafree Twist, step down on the support's stand toe until the support locks (see fig. 37). To ride Lafree Twist again, put your foot in front of the kick stand and move it backward.



## **6.10 Luggage carrier**

If you carry luggage on the carrier, make sure everything is securely fixed and free from the rear wheel, chain, etc. Make sure the total weight of the luggage does not exceed the maximum weight of 25 kg. The carrier is not equipped with rack straps; ask your dealer for straps that can be fixed on Lafree Twist's carrier, so luggage can be carried safely.

Never carry a passenger, unless it is a child in a proper child seat.

## **7. Transportation of Lafree Twist**

When transporting your Lafree Twist, it is best to remove the battery. The bike becomes lighter, so it is easier to lift and manoeuvre.

Several companies have developed special carriers to transport almost every type of bicycle on your car in a safe manner. Some carriers are even equipped with locks. Most carriers can be attached to the trailer coupling or to the roof of your car with special adapters.

Since there are many different kinds of bicycle carriers, all with different designs and systems to fixate the bicycle, it's impossible for Giant to say which one can carry a Lafree Twist and which one cannot.

Your Lafree dealer can advise you which carrier is most suitable for you, your Lafree and your car.

Transportation of your bicycle on a car is always on your own risk. When transporting the bike on the roof or trailer coupling of a car, big forces are applied to the carrier and the bicycle. That's why, before each time you drive a car with a bike on it, you have to check if the carrier has been attached to the car properly. Also check the bike if there are no loose parts, such as dress guards, pump, water bottle, bags, etc. Besides this, each time before you are going to use the bike after having it transported on a car, you have to check the complete bike if parts have come loose or have been damaged.

## **8. Service & maintenance**

### **8.1 General**

NOTE: Technological advances have made bicycles and bicycle components more sophisticated than ever before, and the pace of innovation is increasing. This on-going evolution makes it impossible for this manual to provide all the information required to properly repair and/or maintain your bicycle. In order to help minimise the chances of an accident and possible injury, it is critical that you have any repair or maintenance which is not specifically described in this manual performed by your dealer.

Equally important is that your individual maintenance requirements will be determined by everything from your riding style to geographic location. Consult your dealer for help in determining your maintenance requirements.

The amount and kinds of maintenance you can do yourself depends on your level of skill and experience, and on whether you have the special tools required.

WARNING: Many bicycle service and repair tasks require special knowledge and tools. Do not begin any adjustments or service on your bicycle if you have the slightest doubt about your ability to properly complete them. Improper adjustment or service may result in damage to the bicycle or in an accident which may cause serious injury.

If you want to learn about service and repair work on your bike, you have three options:

1. Ask your dealer whether copies of the manufacturer's installation and service instructions for the components on your bike are available.
2. Ask your dealer to recommend a book on bicycle repair.
3. Ask your dealer about the availability of bicycle repair courses in your area, or through the bike shop.

Regardless of which option you select, we recommend that you ask your dealer to check the quality of your work the first time you work on something and before you ride the bike, just to make sure that you did everything correctly. Since that will require the time of a mechanic, there may be a modest charge for this service.

## 8.2 Service & maintenance schedule.

Some service and maintenance can and should be performed by the owner, and require no special tools or knowledge beyond what is presented in this manual.

The following are examples of the type of service you can perform yourself. All other service, maintenance and repair should be performed in a properly equipped facility by a qualified bicycle mechanic using the correct tools and procedures specified by the manufacturer.

- A) Break-in period: your bike will last longer and work better if you break it in before riding it hard. Control cables and wheel spokes may stretch or "seat" when a new bike is first used and may require readjustment by your dealer. Your mechanical safety checks ([see section 3.5](#)) will help you identify some things that need readjustment. But even if everything seems fine to you, it's best to take your bike back to the dealer for a check-up. Dealers typically suggest you bring the bike in for a 30 day check-up. Another way to judge when it's time for the first check-up is to bring the bike in after about 10 to 15 hours of use. But if you think something is wrong with the bike, take it to your dealer before riding it again.
- B) Before every ride: mechanical safety checks ([see section 3.5](#))
- C) After every long or hard ride; if the bike has been exposed to water or grit; or at least every 150 km or 100 miles:
  - Clean the bike, incl. chain ring and rear wheel sprocket.
  - Clean and lightly oil the chain.
  - Wipe off excess oil.Lubrication is a function of climate. Talk to your dealer about the best lubricants and the recommended lubrication frequency for your area.
- D) After every long or hard ride or after 10 to 20 hours of riding:
  - Squeeze and hold the front brake and rock the bike forward and back. If you feel a clanking or looseness with each forward or backward movement of the bike, you may have a loose headset. Have your dealer check it.
  - Lift the front wheel off the ground and turn the handlebar to the left and to the right a few times. If you feel any binding or roughness in the steering, you may have a tight headset or the headset may need to have grease added to the ball bearings. Please ask your dealer to check it.
  - Hold one pedal and rock it back and forth across the centreline of the bike; then do the same with the other pedal. If anything feels loose, please ask your dealer to check it.
  - Take a look at the brake shoes. If they're starting to look worn or are not hitting the wheel rim squarely, have the dealer adjust or replace them.
  - Check the control cables and cable housings for any rust, kinks, or fraying. If you notice any of these problems or if your brakes and/or shifter are not functioning smoothly, ask your dealer to check and replace the cables if necessary.
  - Squeeze spokes in adjoining pairs on either side of each wheel between your thumb and index finger. They should all have about the same "tension". If any feel loose, have your dealer check the wheel for spoke tension and trueness.

- Check the frame (particularly in the area around all weld joints), the handlebar, the stem and the seat post for any deep scratches, cracks or discoloration. These are signs of stress-related fatigue and indicate that a part is at the end of its useful life and needs to be replaced.
  - Check to make sure that all parts and accessories are still secure, and tighten any which are not.
- E) As required: If either brake lever fails the mechanical safety checks (see section 3.5), restore brake lever travel by turning the brake cable adjusting barrel anti-clockwise, then lock the adjustment in by turning the barrel's lock nut clockwise as far as it will go. If the lever still fails the mechanical safety checks, have your dealer check the brakes.

- F) If the bike won't shift smoothly and quietly from gear to gear: the gear mechanism may be out of adjustment. The cause may be as simple as a stretched control cable, in which case you can compensate by rotating the shift cable adjusting barrel.

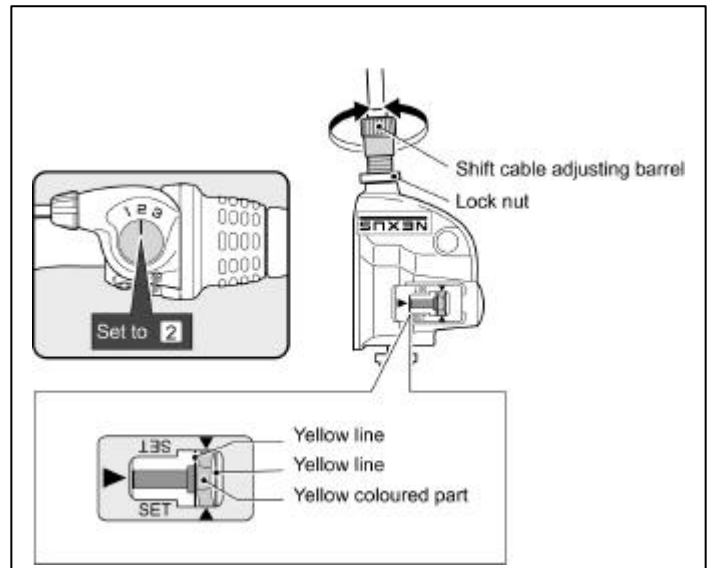
Turn the gear shifter on the handlebar to select the 2nd gear.

The yellow coloured part must be between the 2 yellow lines on the window (rear wheel axle, RH side).

See fig. 38.

If this is not the case, adjust the shift cable adjusting barrel near the rear wheel until the position of the yellow painted arm is correct. Lock the adjustment by turning the barrel's lock nut.

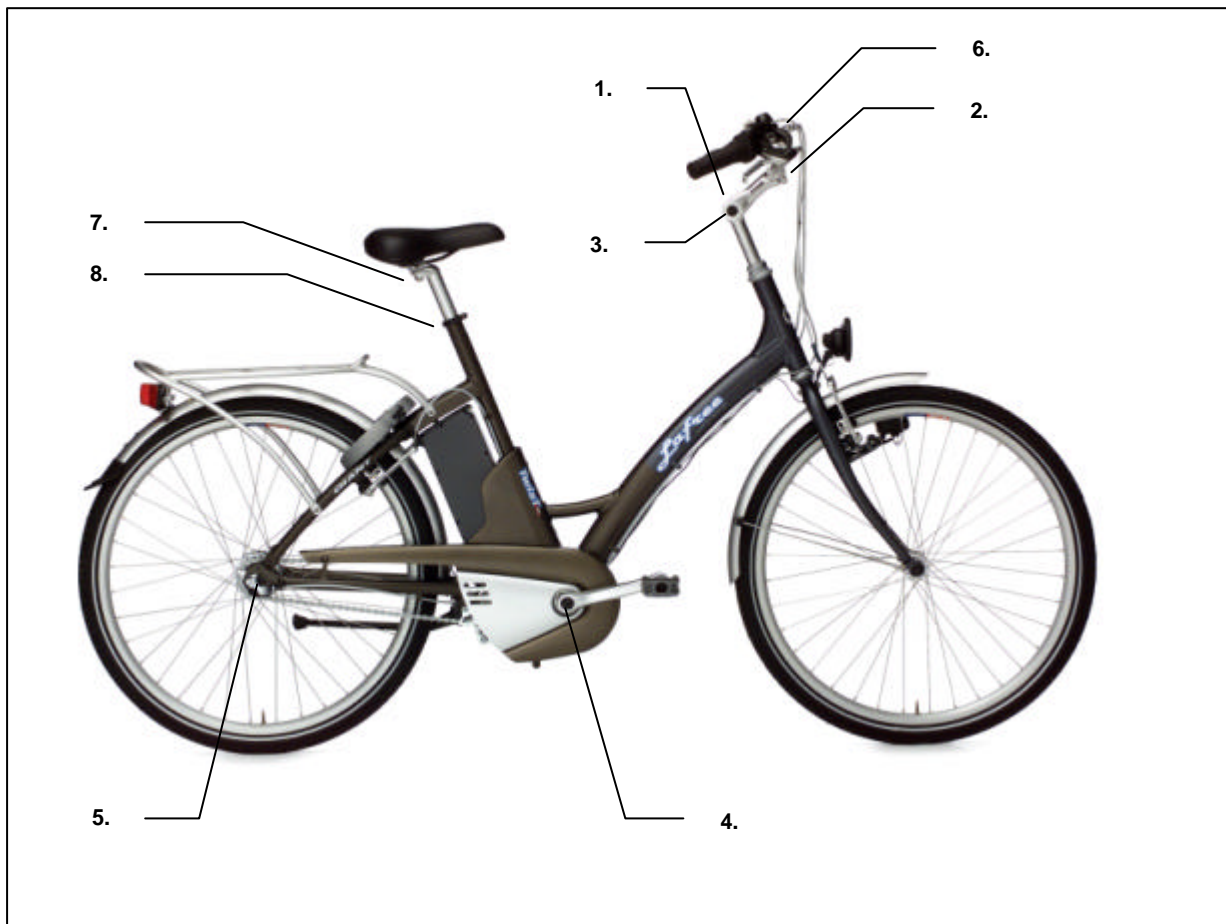
Try shifting again. If turning the cable adjusting barrel does not cure the problem, see your dealer.



- G) Every 50 hours of riding: Take your bike to your dealer for a check-up.



### 8.3 Tightening torque



No.	Description	Tightening torque [Nm.]
1	Stem height adjuster bolt	20~22 Nm
2	Handlebar clamp bolt	13~15 Nm
3	Stem inclination bolt	15~18 Nm
4	Crank arm bolts	35~45 Nm
5	Wheel axle bolts (rear)	30~45 Nm
6	Brake lever bolts	5~9 Nm
7	Saddle retention bolt	8~12 Nm
8	Seat clamp bolt	15~16 Nm

## 9. Precautions and procedures

### 9.1 Emergency equipment and knowledge

You should never go for a bike ride without the following emergency equipment and knowledge:

- Allen wrenches 4 mm., 5 mm. and 6 mm., used to tighten various clamping bolts that may loosen
- Patch kit and a spare inner tube
- Tyre levers
- Tyre pump or cartridge inflator with correct head to fit your tyre valves
- Identification (address, phone number, insurance company, emergency contact, blood type, medical allergies and conditions)

### 9.2 If you get a flat tyre

- (a) Let all the air out of the inner tube ([see section 6.6.2](#)).

Remove one side of the tyre from the rim by inserting a tyre lever in between the rim and base of the tyre's side wall ("bead").

Pry the bead away from the rim by pushing down on the tyre lever.

Take another tyre lever and pry the bead off the rim approximately 10-15 cm. (four to six inches) away from where you started. A third lever may be needed, but at this point you should be able to begin levering the bead off the rim so that the entire circumference of one side of the tyre bead comes off the rim.

- (b) Remove the inner tube. First remove the nut that fixes the air valve to the rim. After that, remove the valve from the rim's valve hole, then remove the inner tube.

Carefully check the outside and inside of the tyre for the cause of the puncture (thorn, glass shard, nail, etc.) and remove the object if it is still there.

If the tyre is cut, line the inside of the tyre in the area of the cut with something that will resist the inner tube forcing its way out of the cut once inflated: a spare patch, a piece of inner tube, a bank note, an energy bar wrapper, a piece of plastic milk carton, etc.

- (c) Either patch the tube (follow the instructions in your patch kit), or use a new inner tube. (It is always a good idea to have a patch kit as well as a new inner tube in case the old inner tube cannot be patched). In case a new inner tube needs to be applied, the wheel needs to be disassembled.

- (d) Before replacing the new/repaired inner tube, put just enough air in to give it some shape.

Starting with the air valve, install the inner tube into the tyre.

Then, starting at the valve, slip the exposed tyre bead into the rim using downward pressure. Make sure the bead seats down below the valve's thick rubber base.

Next, push the tyre's bead down into the rim with your thumbs along either side of the circumference of the rim, not just one side. Make sure the inner tube is not being pinched by the bead. If you have trouble getting the last few cm./inches of bead over the edge of the rim with thumb pressure, use a tyre lever and be careful not to pinch the tube.

#### CAUTION:

Do not use a screwdriver or any tool other than a tyre lever, as you are likely to pinch and puncture the inner tube.

- (e) Check to make sure the tyre is evenly seated around both sides of the rim and that the inner tube is inside the tyre beads. Push the valve stem into the tyre to make sure that its base is seated within the tyre's beads.

Inflate the tube slowly to the recommended pressure ([see section 6.6.1](#)), all the while checking to make sure that the tyre beads stay seated in the rim.

Reinstall the nut that fixes the valve to the rim.

Put the valve cap back in place.

Place the wheel back into the bike ([see section 6.3](#)).

**WARNING:**

Riding your Lafree Twist with a flat or under-inflated tyre can seriously damage the rim, tyre, tube and bicycle, and can cause you to lose control and fall.

### **9.3 If you break a spoke**

- (a) A wheel with a loose or broken spoke is much weaker than a fully tensioned wheel. If you break a spoke while on a ride, you will have to ride much more slowly and carefully as the weakened wheel could experience additional broken spokes and become useless.

**WARNING:** A broken spoke seriously weakens the wheel and may cause it to wobble, striking the brakes or the frame. Riding with a broken spoke(s) can cause you to lose control and fall.

- (b) Twist the broken spoke around the spoke next to it to keep it from flopping around and getting caught between the wheel and the frame. Spin the wheel to see if the rim clears the brake shoes/frame. If the wheel will not turn because it is rubbing against the brake shoe(s), try turning the brake cable adjusting barrel(s) clockwise to slacken the cable and open up the brakes (see section 3.5.3). If the wheel still won't turn, release the brake's elbow cable guide (see section 6.3.4: "Removing a quick-release front wheel") and secure any loose cable as best you can. Walk the bike, or if you must, ride it with extreme caution. However, it is strongly recommended that you not ride with only one functioning brake, and never with two non-operational brakes.

### **9.4 If you crash**

First, check yourself for injuries. Seek medical help if necessary. If you are involved with another vehicle, get as much information as possible from the involved party and any witnesses.

Next, check your bike for damage, and fix what you can.

When you get home, carefully perform the checks described in section 8.2 (D) and check for any other damaged parts. All bent, scored or discoloured parts are suspect and should be replaced.

**WARNING:**

A crash can put extraordinary stress on bicycle components, causing them to fatigue prematurely. Components suffering from stress fatigue can fail suddenly and catastrophically, causing loss of control, serious injury.

**CAUTION:**

If you have any doubt about the condition of the bicycle or any of its parts, take it to your dealer for a thorough check.

Checking the frame regularly and bringing any questionable marks to the attention of your Lafree dealer or other qualified person will prolong the safe use of your frame and components.

## **10. Comfort & performance accessories**

There is a wide range of accessories available for your bicycle. However, you shouldn't assume you can properly install and operate the accessories without first reading any instructions that are enclosed with the product. Be sure to read, and understand, the instructions that accompany the accessories you purchase for your bicycle. If you have the slightest doubt as to your ability to install them correctly, ask your dealer for assistance.

## 11. Dealer service

### 11.1 About your dealer

Your dealer is here to help you properly service and maintain your Lafree electric bicycle, as well as help you select and understand any products and accessories you wish to examine and purchase. Your bike shop's staff has the knowledge, tools and experience to give you reliable advice and competent service. Your dealer carries the products of a variety of manufacturers so that you can have the choices which best meet your needs and your budget.

### 11.2 Guarantee regulations of Lafree Europe

1. The guarantee regulations of Lafree Europe (Lafree) are exclusively valid for the first owner (**owner**) of the Lafree bicycle. In case of a guarantee claim according to the guarantee regulations, the owner is obligated to bring forth the proof of purchase and/or the Lafree guarantee card.
2. The guarantee periods mentioned hereafter are always valid as of the purchase date of the Lafree bicycle (purchase date).
3. Lafree guarantees the owner of the Lafree bicycle that the frame and the non-spring front fork of the Lafree bicycle are free of material and/or construction defects for a period of 10 years .
4. Lafree guarantees the owner of the Lafree bicycle that the lacquer on the frame and the non-suspension front fork is resistant to corrosion and will not peel-off for a period of 2 years.
5. Lafree guarantees the owner of the Lafree bicycle that the parts used in the bicycle are free of material- and/or construction defects for a period of 1 year.
6. The original parts of other manufacturers applied to the Lafree bicycle will be guaranteed by Lafree according to the terms and conditions of the manufacturer of the mentioned parts. Lafree will keep the owner informed in regards to applicability, the terms, and the conditions upon request.
7. The only bicycles that will be taken into consideration for guarantee are those, that were bought at and approved by a Lafree dealer and that were assembled and made ready for riding by this dealer.
8. All guarantee claims need to be exclusively filed by an approved Lafree dealer.
9. If the Lafree bicycle displays any material- and/or construction defects that are mentioned in the guarantee within 60 days after the purchase date, the owner has a right to a repair free of charge and/or a replacement of the specific part. After the mentioned time-period expires, the owner has a right to a repair and/or a replacement of which the costs (transportation costs, labour costs, etc. .) for repair are for the owner's account.
10. Lafree will continuously repair and/or replace the parts needing repair or replacement with at least an equivalent part. Lafree exclusively reviews the choice and model of the specific part.
11. Excluded from the guarantee are defects resulting from wearing away through normal usage , as well as defects resulting from accidents, eccentric use, respectively a usage for which the bicycle was not intended for.
12. The guarantee does not apply if the bicycle is not correctly assembled, repaired by someone other than an approved Lafree dealer, and/or if the bicycle has not been supplied with the original parts.
13. Lafree exclusively makes the decision whether or not the guarantee applies.